

REMARKS

Applicant, his principal representatives in Germany, and the undersigned have carefully reviewed the first Office Action on the merits of October 29, 2007 in the subject U.S. patent application, together with the prior art cited and relied on by the Examiner in the rejections of the claims. In response, several of the claims now pending in the application have been amended. The claims not selected for prosecution in this application have been cancelled. It is believed that the claims which are now pending in the subject application are patentable over the prior art cited and relied on by the Examiner, taken either singly or in combination. Reexamination and reconsideration of the application, and allowance of the claims is respectfully requested.

In the Office Action of October 29, 2007, claims 21 and 35-37 were withdrawn from consideration as being directed to claims not selected for prosecution in the subject application. Applicant again expressly reserves the right to file one or more divisional patent applications directed to those claims.

In the subject invention, as recited in currently amended claim 22, and as depicted in Figs. 1 and 2, a product, generally at 02, is fed along a transport track, such as one of the tracks 36 and 37 depicted in Fig. 10, to a folding table 04. The folding table 04 is typically separate from the transport tracks 36 or 37. It receives the product 02, which is moving in a product transport direction which, as viewed in Figs. 1-3, would be from left to right. Once the product is received on the folding table 04, its forward travel, in the product travel direction, is decreased so that the product 02 will be stopped when it is aligned beneath a folding blade 03. That folding blade 03 is a part of a longitudinal folding apparatus generally at 01, whose purpose is to form a longitudinal fold, which is a fold aligned with the product travel direction. To accomplish the formation of this longitudinal fold, the product is stopped beneath the vertically reciprocable folding blade 03. That blade is supported by the folding table in a manner which will accomplish that vertically reciprocable movement of the longitudinally extending folding blade.

A folding blade drive motor is usable to accomplish the vertical, reciprocatory movement of the folding blade through a folding blade drive mechanism. That mechanism may be the pivotable folding levers 21 which are depicted in Figs. 1 and 2. Alternatively, they may be the levers 43 which are shown in Fig. 9. The folding blade drive motor is controlled independently of the transport track drive mechanism. In other words, the timing of the reciprocation of the folding blade is not a function of the speed of movement of the transport track.

A product sensor is associated with the folding blade and is used to detect a product phase relationship. This is then usable to determine a product passage time. The product sensor controls the operation of the folding blade drive motor in response to the determined product passage time. Once the product has been situated on the folding line, the folding blade is vertically reciprocated so that the product will be longitudinally folded in the product transport direction.

In the first Office Action on the merits of October 29, 2007, claims 22-29, 33 and 34 were rejected under 35 USC 102(a) as being anticipated by DE 198 28 625 to Petratto. It was asserted that DE '625 discloses all of the features of the subject invention, as noted in claims 22-29, 33 and 34. Claims 30-32 were rejected under 35 USC 103(b) as being unpatentable over DE '625 in view of DE 198 02 995 to Wormer, et al. That reference is the equivalent of GB 2 333 768. Further discussion of DE '995 will be based on the British counterpart.

Referring initially to the rejections of claims 22-29, 33 and 34, it was asserted that DE '625 shows a product folding apparatus including a transport track 19 adapted to transport a product 13 and having a transport track drive mechanism 15, 16. An asserted longitudinal folding apparatus was recited as being connected to the transport track and as being adapted to receive the product from the transport track. A folding blade 32 was noted as being provided in the asserted longitudinal folding apparatus. A folding table 11 was indicated as supporting the folding blade which was recited as being movable up and down by a folding blade drive motor

40. DE '625 was further recited as having a folding blade drive motor control device 37 and a product sensor 42 associated with the transport table.

It is initially noted that the Examiner has relied on several sections of the specification of the DE '625 reference, specifically Column 4, lines 1-12 and Column 3, lines 27-28, as discussing certain features of the disclosed invention. Since the undersigned is not able to read German, the following discussion will be based on the teachings of the English language abstract which is available to the undersigned. If the Examiner has an English language translation, the undersigned would appreciate a copy thereof.

A review of the abstract of DE '625 and a careful review of the drawings shows that there are several significant differences between the actual structure and operation of DE '625 and the subject invention, as recited in originally presented claim 22, and even more clearly in claim 22, as currently amended. Initially, although the Office Action recites that the DE '625 device has a longitudinal folding apparatus, it is very clear that the device is, in fact, a transverse folding apparatus. As seen very clearly in Fig. 1, sheets 13 are traveling from right to left in the direction indicated by arrow A. The folding blade 32 is caused to move in a path that is generally transverse to the movement direction A of the sheet 13 in DE '625. It is well known, at least in the relevant art, that a longitudinal fold is a fold generally in the direction of product travel and that a transverse fold is one perpendicular to the direction of product travel. The device shown in DE '625 is a transverse folding device, not a longitudinal folding device. In the English language abstract of DE '625, it is recited, in part that a folding edge of the folding blade is aligned at right angles to the transport direction. Accordingly, the DE '625 reference cannot anticipate the subject invention, as recited in claim 22, as filed and even more clearly as amended.

Claim 22, as filed, recited that the longitudinal former blade was raised and lowered by the folding blade drive motor. Claim 22, as amended, recites that the longitudinal folding blade is vertically reciprocable. Support for that language can be found in the Substitute Specification

at page 22, ¶ 39, line 2 thereof. As the term suggests, vertically reciprocable means are up and down motion. It does not include a translatory component. In contrast, the transverse folding blade 32 of DE '625 moves both vertically, as well as horizontally. In support, note the discussion in the abstract of the folding blade 32 being inclined in a transport direction A and being "...lowered along an approach track with a speed component $X\alpha$ in the transport direction A of the sheet 13". That speed component $X\alpha$ is clearly depicted in Fig. 3. In other words, the folding blade 32 of DE '625 does not vertically reciprocate. It moves both up and down and back and forth, all in a direction which is essentially transverse to the sheet travel direction A.

The reason for the compound motion of the blade in the DE '625 reference is that the sheet 13 which is being transversely folded is traveling in the sheet transport direction A during its folding. If the blade 32 of DE '625 reciprocated vertically, the sheet 13 would move relative to the blade during a transverse folding operation. Such relative movement would clearly not be acceptable.

In the DE '625 device, the sheets 13 are being moved in the transport direction A by a pair of spaced conveyor belts 15 and 16. These belts carry the sheets to the folding opening 33 where they are pushed downwardly by the transverse folding blade 32 into engagement with the folding rollers 30 and 31. The folding blade 32 is moved in its angled downward translatory path of movement by the operation of a folding blade motor drive 40 which is under the control of a control device 37. That control device 37 is coordinated, by the workings of an electronic control circuit 36, 37 with the movement facilities for the sheets 15, 16, 35, all as recited in the English language abstract of the DE '625 reference.

The plain wording of the abstract of the DE '625 reference makes it very clear that the movement facilities 38, 40, 41 for the transverse folding blade 32 and the movement facilities 15, 16, 35 for the sheets are correlated by the use of an electronic control unit 36, 37. In other words, the speed of the belts 15 and 16, and of the drive motor 35 for the folding rollers 30 and 31 are correlated with the speed and timing of the translatory movement of the transverse

folding blade 32. Since the proper positioning of such a transverse fold in a moving sheet 13 depends on the engagement of the middle of the sheet with the blade, it is imperative that the blade movement and the sheet movement be coordinated to each other.

In the subject invention, as recited in currently amended claim 22, the folding blade is caused to vertically reciprocate by a folding blade drive motor. That motor is controlled independently of the transport track drive mechanism, as is also recited in currently amended claim 22. Further, claim 22 recites the provision of a folding blade drive motor control device which is adapted to provide the control for the folding blade drive motor. A product sensor is arranged adjacent the folding table and is usable to detect a product phase relationship for determining a product passage time. The sensor controls the folding blade motor, through the folding blade motor control device, to effect the movement of the folding blade. Thus, in contrast to the '625 device, in which the speed of sheet transport and the movement of the folding blade are coordinated, in the subject invention, the location of the product, at a specific time, on the feed table, and the longitudinal folding blade are coordinated. The separate transport track drive mechanism of the subject device, as recited in currently amended claim 22, is independent of the folding blade drive motor control device.

For the reasons recited above, claim 22, as filed, and even more clearly as amended, is not anticipated by DE '625. That reference's device operates in a different manner, using different components, to attain a different result. In the DE '625 device, the sheets are transversely folded while they are moving along the surface 19 under the influence of the belts 15 and 16. In the subject device, the products are longitudinally folded by a vertically reciprocable blade which they are supplied, essentially without any movement in their transport direction.

The present invention, as recited in presently amended claim 22, would not be obvious over the DE '625 device. The two are fundamentally different in their objectives, and in their

methodology. The DE '625 device could not be altered or re-configured to arrive at the subject invention, as recited in currently amended claim 22.

All of the other claims now pending in the application depend from believed allowable, currently amended claim 22. They are also believed to also be allowable over DE '625. The asserted movable buffers 15 and 16 of this reference, as discussed in connection with the rejections of claims 24-26 are the same elements as were recited as being a transport track drive mechanism in connection with the rejection of claim 22. They cannot be two different things in two different claims. The elements 15 and 16 are clearly the drive belts that move the sheets 13 toward the folding blade 32. They are not buffers and do not slow the sheets 13 down.

At least in the abstract of the DE '625 document, there is no discussion of the structure or function of the element 42, which is asserted as being a sensor. While that assertion may well be accurate, in the absence of some positive teaching in the abstract, the statements by the Examiner, as to the asserted features of the element 42 are unsupported.

With respect to claims 28 and 29, DE '625 shows the use of belts 15 and 16 to transport the sheets 13 to the transverse folding rollers 30 and 31. These belts, as discussed above, are not a movable buffer, as that term is defined in the subject application.

With regards to claims 33 and 34, the asserted product sensor 42 is not described in the abstract of DE '625. Again, assuming that element 42 is a sensor, it is connected to the electronic control circuit 36, 37. That control unit correlates the movement of the folding blade to the movement facilities 15, 16 and 35 for the sheets. In other words, the blade 32 is connected to the belts 15 and 16. These belts are not the product buffer. The sensor of DE '625 is not used to synchronize the movement of the folding blade with the product phase relationship. It is used to coordinate the speed of the blade movement with the speed of the belts.

Claims 30-32 were rejected under 35 USC 103(a) as being unpatentable over DE '625 in view of DE 198 02 995. The DE '995 reference is the equivalent of GB 2 333 768 which will be

utilized in the follow discussion. It was asserted in the Office Action that GB '768 discloses that it is well-known to provide a sheet to reliably supply products for further processing. However, the device shown in GB '768 does not describe or discuss the function or operation of the two folding units 1 and 2 which are located after the sheet assembly 5. Accordingly, a combination such as the one proposed by the Examiner, would not render the subject invention, as recited in claims 30-32 obvious to one of skill in the art. The combination of the sheets of GB '768 with the transverse folder of DE '625 would not be the same as, or similar to the subject invention, as recited in the claims which are currently pending in the subject U.S. application.

SUMMARY

Various ones of the claims now pending in the subject U.S. patent application have been amended. The claims withdrawn from consideration by the Examiner have been cancelled in this application. It is believed that the claims now pending in the subject application are patentable over the prior art cited and relied on. Allowance of the claims, and passage of the application to issue is respectfully requested.

Respectfully submitted,

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January 28, 2008
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Attorney Docket: W1.2315 PCT-US